

smooth surface and glassy lustre of fresh spicules; the surface, indeed, differs very much as that of ground from polished glass. That they have exchanged the colloid for the crystalline state is clearly shown by the elevation which has taken place in their refractive index and by the colours which they give with polarized light. The effects of solution are visible in little hemispherical pits which have been eaten in over the surface (fig. 46), and by the irregular outline of some of the fusiform spicules, which appear in optical section as though irregularly scoloped. The canals of many are enlarged, but obliterated in the majority, probably as a result of secondary silicification. To secondary silicification we may also refer the tuberculation of some of the forms. Occasionally dendrites of iron pyrites are seen shooting through the substance of the spicules, the first stage of a replacement which is found completed in spicules from other deposits.

Probable depth of the Sea.—The sponges which furnished the spicules lived on a sea-floor probably somewhere between 100 and 400 fathoms deep. The Lithistidæ, which have furnished so large a proportion of the spicules, have been dredged from depths varying between 75 and 374 fathoms. *Lyidium torquilla*, which so closely resembles the fossil *Podopsis*, was obtained from a depth of 270 fathoms. Of other sponges the recent *Pachastrella geodoides*, which our *P. globiger* resembles, was dredged from 292 fathoms, and *Geodia Macandrewi*, which is represented by the fossil *G. cretaceus*, from 100 to 270 fathoms.

[To be continued.]

XLVIII.—*Additional Observations on the Antipatharia.*

By H. J. CARTER, F.R.S. &c.

By reference to the footnote at page 304 of the last number of the 'Annals,' it will be seen that I had not then read Lacaze-Duthiers's memoirs "Sur les Antipathaires" (in the 'Annales des Sciences Naturelles, Zoologie,' tomes ii. and iv. pp. 169 and 1 of 1864 and 1865 respectively) at the time that I finished my short article on the Antipatharia, chiefly questioning the nature of the polyp (viz. whether Hydroid or Actinoid?), and stating, at page 302, that MM. Milne-Edwards and Jules Haime, in 1857, had summed up our knowledge on this point in the following way, viz.:—
"Jusqu'ici on n'a pas étudié l'anatomie de ces animaux, et on

ignore la disposition des lamelles mésentéroïdes et des organes générateurs."

Since then I have read Lacaze-Duthiers's memoirs; and although the *spineless* are separated from the *spiniferous* species of Antipatharia under the name of "*Gerardia*," whose polyps are evidently actinoid, nothing is so satisfactorily stated of the polyps of the *spiniferous* species, which in contradistinction are termed "*Antipathaires vrais*."

Thus, at p. 25 *et seq.* (tom. iv. *op. cit.*), we learn, respecting the "*Organisation des Polypes*," that in *A. subpinnata* (Ellis & Solander), the Mediterranean species which Lacaze-Duthiers had *alive* in an aquarium while on the coast of Africa, the oral aperture was linear elliptical, surrounded by a slight prominence, from which six lines radiate outwards hexagonally, between each two of which is a round tubercle indicative of its tentacular nature, also arranged elliptically; that the surface is covered with cilia, in the midst of which are groups of thread-cells; and that, when viewed laterally ("*de profil*"), under the microscope with a power of 60 diameters (p. 60), an œsophageal channel may be seen to pass downwards from the oral aperture or mouth, to be followed by what are conjectured to be two mesenteric laminae ("*cordons pelotonnés*") covered with thread-cells, the remains of six of which, but for an arrest of development, might have been the same as in the development of the young *Actinia* at this period. "*Ne pourrait-on pas dire qu'un arrêt de développement a frappé quatre des cloisons primitives, et que deux se sont seulement développées?*" (pp. 27, 28). Finally, at p. 52, it is stated respecting the reproductive process, "*aussi n'ai-je rien à dire de cette fonction.*"

Hoping to find something more in the late lamented Count Pourtalès's Report on the specimens of *Antipathes* dredged in the Caribbean Sea by the 'Blake,' under the superintendence of Prof. A. Agassiz, in 1878-79, and published in February last*, I consulted a copy kindly lent me by Mr. Stuart O. Ridley, F.L.S., of the British Museum, for this purpose, from which the following is an extract of that lamented author's prefatory remarks:—

"With regard to the polyps, the drawings herewith presented have the disadvantage of having all been made from alcoholic specimens in various stages of contraction. Still there are differences from one species to another which cannot be ascribed to that cause. There appears to be a connexion

* Bulletin of the Museum of Comparative Zoology, Harvard College, Cambridge, Mass., vol. vi. no. 4, "Report on the Corals and Antipatharia," by L. F. Pourtalès.

between the shape of the polyps and the shape and disposition of the spines. Those species which have triangular spines have polyps with longer tentacles than those with cylindrical spines, with a greater tendency to become regular in shape, though there are some in which the polyp is very oblong in horizontal outline, as in *A. tetrasticha* (pl. iii. fig. 30). Very long tentacles are found in *A. spiralis* (figs. 25, 26). In very few instances the tentacles are found retracted, as figured by Lacaze-Duthiers; in most cases they are simply contracted; and in many species they are probably not retractile at all."

Out of the twelve species whose skeletons are then described three only have their polyps noticed and figured, viz. *Antipathes spiralis*, *A. picea*, n. sp., and *A. felix*, Pourt.

The plate contains twenty-five figures characterizing the spines and their disposition on twenty species, together with eight figures characterizing the appearance of the polyps on seven species.

Thus this Report, of February 1880, adds hardly any thing more to our knowledge of the polyp of *Antipathes* than MM. Milne-Edwards and Jules Haime had stated in 1857; nor are we likely to get more until some one with equal ability studies the living *Antipathes* after the manner of Mr. Moseley's investigations of *Millepora* &c., published in the 'Philosophical Transactions.'

XLIX.—*Description of a new Species of Turbo, and a Note on the Occurrence of Rossia Owenii on the Coast of North Wales.* By EDGAR A. SMITH.

Turbo cepoides.

Testa anguste sed profunde perforata, ovato-conica, pallide fusca, viridi strigata alboque variegata. Anfractus 7, valde convexi, superne leviter depressi vel subexcavati, incrementi lineis conspicuis, irregularibus, sublamellosis ornati, striis spiralibus inconspicuis et sulcis paucis superne sculpti. Apertura fere circularis, spira paulo brevior, intus dilute salmonea, margaritacea. Long. 80 millim., diam. max. 70; apertura 38 millim. longa.

Hab. —?

The colour of this shell calls to mind the greenish striping of an onion, from which circumstance I have imposed upon it the name *cepoides*. The ground-colour is a light yellowish brown; the lines of growth are of a peculiarly imbricating